

IN THE CLAIMS:

Claim 1 (Original): An electron-beam drawing apparatus for drawing a desired pattern by applying an electron beam formed by using a plurality of apertures onto the surface of a sample, comprising a first quadrangular aperture in which two opposite sides are parallel with each other and each corner forms a right angle, a second parallelogrammatic aperture in which two opposite sides are parallel with each other, and deflection means for an electron beam passing through the second aperture, wherein a desired pattern is drawn on the surface of a sample.

Claim 2 (Previously Presented): The electron-beam drawing apparatus according to claim 1, wherein the second parallelogrammatic aperture has a diagonal width of 1 μm , or less and a longitudinal width which can be changed depending on the first aperture.

Claim 3 (Original): The electron-beam drawing apparatus according to claim 1, wherein oblique-side-portion-contour decomposition means for cutting out an oblique-side portion of a drawn shape at a predetermined width adjusted to an aperture shape is included to draw the cut-out oblique-side portion by using the parallelogrammatic aperture.

Claim 4 (Original): The electron-beam drawing apparatus according to claim 3, wherein a code is added to a parallelogram, a triangle, and a quadrangle of a figure cut out by oblique-side-portion-contour decomposition means respectively and aperture-number generation means corresponding to the figure codes are used to draw an oblique-side portion by using a variable parallelogrammatic aperture and the inside portion of an oblique side by using a triangular aperture and a quadrangular aperture.

Claim 5 (Previously Presented): An electron-beam drawing method for drawing a desired pattern by applying an electron beam formed by using a plurality of apertures onto the surface of a sample, comprising the steps of forming an electron beam by a first quadrangular aperture in which two opposite sides are parallel with each other and each corner forms a right angle, forming an electron beam by a second parallelogrammatic aperture, deflecting the electron

beams in accordance with an electron-beam drawn shape passing through the second aperture, and drawing a desired pattern on the surface of a sample.

Claim 6 (Original): The electron-beam drawing method according to claim 5, wherein an oblique-side contour portion is decomposed, a code is added to a parallelogram, a triangle, and a quadrangle of a figure cut out through decomposition and aperture numbers corresponding to the figure codes are added to draw an oblique-side portion by using a variable parallelogrammatic aperture and the inside portion of an oblique side by using a triangular aperture and a quadrangular aperture.

Claim 7 (Previously Presented): An electron-beam drawing apparatus for drawing a desired pattern on a substrate using an electron beam comprising:

- an electron beam source;

- a first quadrangular aperture in which two opposite sides are parallel with each other and each corner forms a right angle through which said beam is directed;

- a second parallelogrammatic aperture in which two opposite sides are parallel with each other and through which said beam is directed after passing said first aperture; and

- a deflector disposed between said first and second apertures to deflect the electron beam before passing through the second aperture to generate a parallelogram of shape which is varied based on the amount of deflection by said deflector.

Claim 8 (Previously Presented): The electron-beam drawing apparatus according to claim 7, wherein the length of said parallelogram is varied based on the amount of deflection by said deflector.

Claim 9 (Previously Presented): The electron-beam drawing apparatus according to claim 7, wherein said deflector is adapted to deflect said beam in a direction parallel to the width of said parallelogrammatic aperture.

Claim 10 (Previously Presented): The electron-beam drawing apparatus according to claim 7, wherein said deflector is adapted to deflect said beam in a direction parallel to the length of said parallelogrammatic aperture.

Claim 11 (Previously Presented): The electron-beam drawing apparatus according to claim 7, wherein the second parallelogrammatic aperture has a diagonal width of 1 μm , or less and a length which is varied with the deflection on said beam after it has passed said first aperture.

Claim 12 (Previously Presented): The electron-beam drawing apparatus according to claim 8, and further including:

an oblique-side-portion-contour decomposition circuit adapted to cut out an oblique-side portion of a drawn shape at a predetermined width adjusted to an aperture shape to draw the cut-out oblique-side portion by using the variable length parallelogram shape obtained by passing the beam through said first and second apertures.

Claim 13 (Previously Presented): The electron-beam drawing apparatus according to claim 12, and further including:

additional apertures to generate a triangle and a quadrangle to form part of a figure cut out by said oblique-side-portion-contour decomposition circuit; and

an aperture-number generation circuit for generating figure codes to select desired apertures to draw an oblique-side portion by using the variable length parallelogram and to draw the inside portion of an oblique side by using a triangular aperture and a quadrangular aperture.

Claim 14 (Previously Presented): An electron-beam drawing method for drawing a desired pattern on a substrate comprising:

generating an electron beam;

forming the electron beam by:

passing it through a first quadrangular aperture in which two opposite sides are parallel with each other and each corner forms a right angle,

passing said electron beam after passing said first aperture through a second parallelogrammatic aperture, and

deflecting the electron beam before it passes through said second aperture in accordance to draw a variable parallelogram shape on the surface of a sample.

Claim 15 (Previously Presented): The electron-beam drawing method according to claim 14, wherein said parallelogram shape is variable in length

Claim 16 (Previously Presented): The electron-beam drawing method according to claim 14, comprising deflecting said beam in a direction parallel to the width of said parallelogrammatic aperture.

Claim 17 (Previously Presented): The electron-beam drawing method according to claim 14, comprising deflecting said beam in a direction parallel to the length of said parallelogrammatic aperture.

Claim 18 (Previously Presented): The electron-beam drawing apparatus according to claim 15, wherein said second parallelogrammatic aperture has a diagonal width of 1 μm , or less and said deflection varies the length the resulting variable parallelogram shape.

Claim 19 (Previously Presented): The electron-beam drawing method according to claim 15, and further comprising:

- decomposing an oblique-side contour portion of a shape to be drawn,
- defining codes for a parallelogram, a triangle, and a quadrangle;
- adding aperture numbers corresponding to the figure codes;
- drawing an oblique-side portion of the shape to be drawn by using the variable length parallelogram; and
- drawing the inside portion of the oblique side by using a triangular aperture and a quadrangular aperture.